

# Department of Energy

Idaho Field Office 785 DOE Place Idaho Falls, ID 83401-1562

March 19, 1992

Dear Citizen.

The Department of Energy, the Environmental Protection Agency, and the State of Idaho are seeking comments on a proposed cleanup project at the Power Burst Facility at the Idaho National Engineering Laboratory. The Federal Facility Agreement and Consent Order identifies this proposed cleanup as an Interim Action. An Interim Action is an expedited cleanup process that is conducted to eliminate, reduce, or control a current potential threat to human health and the environment that is posed by a site. Enclosed for your review is the proposed plan for the cleanup project. The proposed plan discusses the cleanup alternatives for the Corrosive Waste Sump, Evaporation Pond, and related piping at the Power Burst Facility.

The Power Burst Facility reactor was built to test pressurized-water reactor fuel rods under conditions imposed by hypothetical reactor accidents. It began operation in 1972 and testing and operation was completed in 1985. The Corrosive Waste Sump, discharge pipe, and the Evaporation Pond were used during this time to neutralize, transfer, and impound effluents from reactor operations. The facility is currently in a standby mode and future use of the reactor is not anticipated.

The sump, discharge pipe, and Evaporation Pond were contaminated with organic compounds, metals, and radionuclides during the operation of the reactor. Results of sampling and analysis of the Corrosive Waste Sump and Evaporation Pond indicate contaminants are present at levels that may be detrimental to human health and the environment. There are approximately 100 cubic yards of contaminated material that will be addressed by this project. While this volume and level of contamination is considerably less than the levels identified in previous INEL cleanup projects, the remediation is being considered to reduce potential exposure to chromium and low-level radionuclides that was identified in the risk assessment.

Federal guidelines suggest that few alternatives, and in some cases perhaps only one, should be evaluated for an interim action. This proposed plan evaluates two alternatives for cleanup and describes the alternative preferred by the agencies. The remedy selected by the agencies may be the preferred alternative as outlined in the proposed plan or a combination of other alternatives and suggestions offered by the public.

In addition to the request for written comments on this project, two meetings have been scheduled by the agencies. The meetings will begin at 6:30 p.m. The meeting locations and dates are:

Idaho Falls Burley Westbank Inn, 475 River Parkway

Burley Inn, 800 N. Overland

Wednesday, April 8, 1992

Thursday, April 9, 1992

An informal discussion of this project is scheduled from 5:30 to 6:30 p.m. at each of the meeting locations. During this time, DOE and contractor staff will be available to discuss various elements of the project and answer questions.

For additional information on this project, an Administrative Record file for the Power Burst Facility Interim Action is available for review at the INEL Information Repository section of the public libraries in Boise, Moscow, Pocatello, Twin Falls, and Idaho Falls and the INEL Technical Library in Idaho Falls.

If you have written comments you would like to provide, please send them by April 24, 1992 to the following address:

Jerry Lyle, Deputy Assistant Manager Environmental Restoration and Waste Management 785 DOE Place, MS 3902 Idaho Falls, ID 83401-1562

I encourage you to participate in the selection of the remedy for the cleanup at the Power Burst Facility. I invite and encourage you to read the proposed plan, ask questions, and offer suggestions regarding this cleanup activity.

Sincerely,

Alice C. Williams

Director

Environmental Restoration Division



# Proposed Plan for an Interim Action of the Power Burst Facility Corrosive Waste Sump and the Power Burst Facility Evaporation Pond

This proposed plan describes alternatives being considered as remedial actions to address the potential risks to public health and the environment from contaminants in the Power Burst Facility (PBF) Evaporation Pond, Corrosive Waste Sump, and related piping. The PBF is located at the Idaho National Engineering Laboratory (INEL) as shown in Figure 1.

This plan provides an overview of the alternatives so the public can review what is being considered by the lead agency Department of Energy (DOE), the Environmental Protection Agency (EPA), and Idaho Department of Health and Welfare (IDHW), and as required by Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The actual alternative selected for addressing the contamination may be the preferred alternative, a modification of the alternative, or another cleanup action identified as a better option during the comment period. Therefore, the public is encouraged to review all alternatives, not just the preferred alternative. The actual alternative used to clean up the site will not be selected by EPA, IDHW, and DOE until the public comment period has ended and all comments have been received and considered.

# How to Participate

The public is encouraged to participate in the selection of the remedy. You can participate in several ways. These include reading this proposed plan, reading additional documents at one of the information repositories listed on page 9, attending one of the public meetings listed on page 8, or commenting on the proposed plan. Written and verbal comments will be given equal consideration and can be made at the public meetings or by letter.

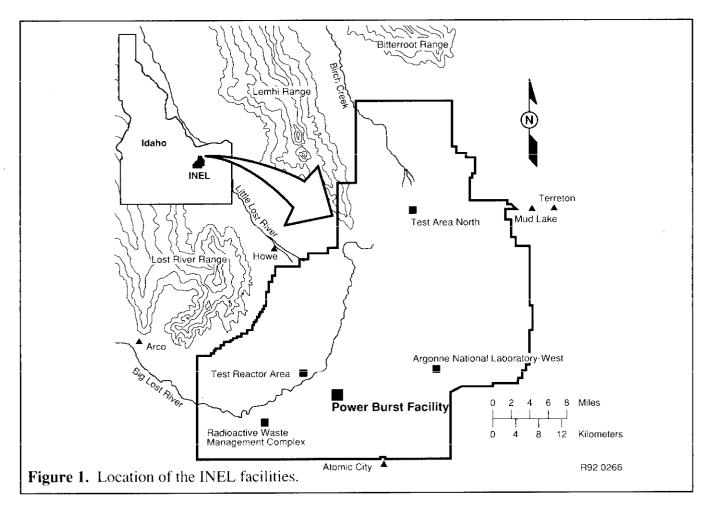
Public Comment Period
March 25 to April 24, 1992

Letters must be delivered to the address listed on page 9 and received by the end of the comment period. All letters, comments, and transcripts of the meetings will become part of the Administrative Record. Information used to select the preferred alternative has already been included in the Administrative Record.

EPA, IDHW, and DOE will present their response to all comments submitted, during the comment period, in a document called a Responsiveness Summary. After considering all comments, the agencies will select the actual remedial action and document this choice in a Record of Decision (ROD). The ROD and the Responsiveness Summary will be available in the Administrative Record and at the information repositories listed on page 9. Questions on this process should be directed to the INEL Community Relations Office at 785 DOE Place, MS 3902, Idaho Falls, ID 83401-1562.

# Contents

How to Participate	100
Background	.2
Site Description	.3
Waste Generation	.3
Contaminants of Concern	.3
Preliminary Risk Evaluation and	griff of Salas at a
Need for Interim Action	.4
What are the Interim Action	
Alternatives?	.5
Summary of Alternatives Analyzed	.5
Evaluation of Alternatives	.6
Summary of Preferred Alternative	.8
Public Involvement Opportunities	.8
Addresses	.9
Glossary and Acronyms	.9



### **Background**

The INEL is a government-owned, contractor-operated DOE facility presently operated by EG&G Idaho, Inc., and several other contractors. The INEL encompasses approximately 2,315 km<sup>2</sup> (890 mi<sup>2</sup>) on the Eastern Snake River Plain in southeastern Idaho.

The primary missions of the INEL are nuclear reactor technology development and waste management. In November 1989, the INEL was placed on the National Priorities List (NPL) because releases of hazardous substances that may pose a risk to human health and the environment have occurred.

To better manage the investigations needed to determine appropriate remedial actions, the INEL has been divided into 10 Waste Area Groups (WAGs). Each WAG contains several former waste disposal sites called operable units. This

strategy allows the EPA, IDHW, and DOE to focus available cleanup resources on those areas that could potentially pose a risk to public health and the environment.

A schedule for the characterization and cleanup of each operable unit is in the Federal Facility Agreement and Consent Order (FFA/CO) and Action Plan documents. These documents are the result of negotiations between the EPA, IDHW, and DOE. The documents provide procedures and processes to ensure that cleanups at the INEL will be conducted in compliance with State and Federal environmental laws, as required by CERCLA.

WAG-5 consists of the PBF and the Auxiliary Reactor Area. PBF is located in an area originally constructed for the Special Power Excursion Reactor Tests (SPERT).

The PBF nuclear reactor is still operational but is in standby mode. Future use of the PBF nuclear

reactor is not anticipated. This proposed plan offers remedial alternatives for the Corrosive Waste Sump, Evaporation Pond, and the discharge pipe running between Corrosive Waste Sump and Evaporation Pond. In 1999, the final action for the sump and pond will be determined in the Remedial Investigation/Feasibility Study (RI/FS) for WAG-5.

An interim action allows, based on a qualitative risk assessment, a site to be remediated in phases. This provides for early action to reduce or control the migration or hazards posed by contamination prior to the final action. A final action provides the final corrective measures required to remediate a contaminated area.

# Site Description

EG&G Idaho, Inc., operates the PBF area where the Corrosive Waste Sump and the Evaporation Pond are located. The PBF area is located in the south central portion of the INEL, about 9.8-km (6-mi) northeast of the Central Facilities Area in an area originally constructed for the SPERT reactors (Figure 2).

The PBF reactor, which began operation in 1972, was built to support the Thermal Fuel Behavior Program's testing on pressurized-water reactor fuel rods under hypothetical reactor accidents. The testing program was completed in 1985.

Wells in the PBF area indicate that groundwater is 146 m (478 ft) below ground surface.

The Evaporation Pond is a lined surface impoundment used to receive reactor coolant water from the PBF (Figure 2). The pond is enclosed in a 2-m (6-ft) high cyclone fence. The water discharged to the pond contained low levels of organic compounds, metals, and radionuclides.

As a result of evaporation of coolant water discharged to the pond, metals and low-level radioactive contamination are found primarily in sediment located on top of the Hypalon liner. There is no leak detection system under the liner, and no samples have been collected from beneath the liner to determine if leakage and subsequent contamination of the soils beneath the liner have occurred.

A 15-cm (6-in.) diameter discharge pipe leads from the Corrosive Waste Sump to the Evaporation Pond. The Corrosive Waste Sump was used during the neutralization of spent reactor coolant water prior to discharge to the Evaporation Pond. The inside of the sump and discharge pipe are contaminated with organic compounds, metals, and radionuclides.

#### Waste Generation

The corrosive waste sump and evaporation pond are part of the reactor coolant system. Prior to usage in the reactor coolant system, raw water was demineralized and treated in Auxiliary Building PBF-624. The demineralized water was treated with sulfuric acid until a neutral pH between 7.0 to 8.0 was obtained, and hexavalent chromium was added, which acted as an algal and corrosion inhibitor. The coolant systems were drained two to four times per year, when the reactor was operational. Before draining, the coolant was treated by bubbling sulfur dioxide through the liquid. The sulfur dioxide reduced the hexavalent chromium to less toxic trivalent chromium. The coolant was discharged to the Corrosive Waste Sump, where the liquid was neutralized (to a pH between 6.5 and 7.0) using sulfuric acid. From 1978 to 1984 the neutralized coolant was disposed of by pumping it through the discharge pipe to the Evaporation Pond. As a result of leakage between the primary and secondary cooling systems, the coolant discharged was contaminated with small amounts of radionuclides.

### Contaminants of Concern

Biased and random sediment samples were collected to more definitively characterize materials contained within the pond, sump, and discharge pipe contamination.

In addition to sampling waste disposal areas, undisturbed areas were sampled to characterize background metal levels near the Corrosive Waste Sump and the Evaporation Pond. The purpose of the background samples was to have a point of comparison for the samples collected in the pond. Background samples indicated the surrounding soils have a mean total chromium concentration of 21mg/kg.

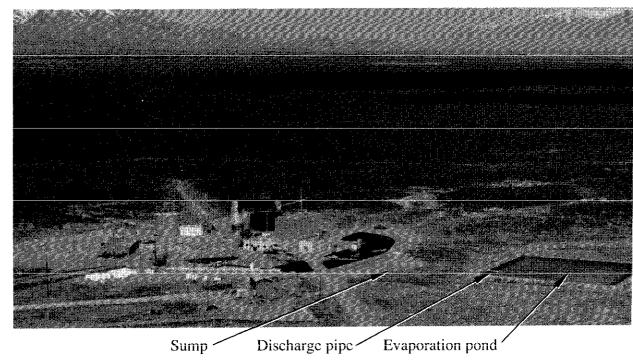


Figure 2. PBF area.

Analyses performed on the samples collected from the Evaporation Pond sediments were for the presence of radionuclides and total chromium (all forms of chromium present).

Elevated concentrations of cesium-137 (137Cs) were identified in the Evaporation Pond sediments. The highest concentrations of 137Cs (325 pCi/g) were at the pond inlet with an average concentration of 20.25 pCi/g throughout the pond. Sample results indicate the mean total-chromium concentration found in the pond sediments is 713 mg/kg with a maximum concentration of 3,439 mg/kg.

The results of the Corrosive Waste Sump sampling indicate the volatile organic compounds 4-methyl-2-pentanone (150.0 to 170.0 µg/kg), ethylbenzene (5.0 to 16.0 µg/kg), and xylene (32.0 to 100.0 µg/kg) were present in low parts per billion concentrations. These results also indicate the presence of low-level (6.97 and 7.86 pCi/gm) radioactivity.

# Preliminary Risk Evaluation and Need for Interim Action

A risk evaluation was performed in accordance with EPA guidance.

Data collected from the results of sampling and analysis of the Corrosive Waste Sump and the Evaporation Pond indicate contaminants are present at levels that may be detrimental to human health and the environment. The main goal of this interim action is to reduce the potential for exposure to chromium and low-level radionuclides resulting from inhalation and direct ionizing radiation. In addition, the interim action must be compatible with the final remedy selected by the RI/FS.

Actual or threatened releases of hazardous substances from these sites, if not addressed by the preferred alternative may present a current or potential threat to public health, welfare, or the environment.

## What are the Interim Action Alternativies

The options evaluated for the Evaporation Pond are:

Alternative 1: No Action

Alternative 2: Hot Spot Removal

- a. Treatment and disposal at TRA Warm Waste Pond.
- b. Treatment and disposal at the RWMC.

## **Summary of Alternatives Analyzed**

#### **Alternatives**

As a result of the 1989 sampling and analysis at the Evaporation Pond, it has been estimated that a 42.7 x 42.7 x .2 m (140 x 140 x .5 ft) volume [270 m³ (9,800 ft³)] of sediment is contaminated with metals and radionuclides. The constituents of particular concern are <sup>137</sup>Cs and chromium. Two alternative actions were evaluated for the Evaporation Pond site. A summary of the alternatives and controls provided by each alternative is described below.

### Alternative 1: No Action

The "no action" option leaves the site in its current state. This option does nothing to restrict further access to the site or restrict the pathways through which the contaminants may be transported.

This alternative has to be included to establish a baseline for comparison. No cost or implementation time is involved with this alternative.

#### Alternative 2: Hot Spot Removal

There is a strong correlation between areas of higher radioactivity (hot spots) and elevated levels of chromium in the pond sediments. This process involves the removal of the hot spots. Removing the hot spots reduces potential risk to human health and the environment. Removal of the hot spots will generate approximately 100 yds<sup>3</sup> of contaminated material. Two treatment and disposal options are currently being evaluated for the removed sediments. Option A involves treatment and disposal using the Test Reactor

Area (TRA) soil washing process. Option B involves treatment (stabilization/solidification) and disposal at the Radioactive Waste Management Complex (RWMC). The stabilized soil would be used to fill void spaces in low-level waste containers, thereby increasing the structural stability of the containers.

During the soil removal process, the materials located in the sump will also be removed, treated, and disposed.

## **Evaluation Criteria**

The National Contingency Plan (NCP) requires an evaluation of each alternative be preformed against the following nine criteria.

# Overall Protection of Human Health and the Environment.

Whether a remedy provides adequate protection and how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

# Compliance with Federal and State Environmental Standards.

Whether a remedy will meet all the applicable or relevant and appropriate requirements (ARARs) of Federal and State environmental statues or provide grounds for invoking a waiver.

#### Long-Term Effectiveness and Permanence

The magnitude of any remaining risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

# Reduction of Toxicity, Mobility, or Volume through Treatment

The anticipated performance of the treatment technologies that may be employed.

# Short-Term Effectiveness

The degree with which the remedy is protective of worker health and safety, as well as the remedy's potential to create adverse impacts during the construction and implementation period.

### **Implementability**

The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the selected solution.

#### Cost

Includes capital, operations, and maintenance.

#### State Acceptance

Indicates whether, based on its review of the proposed plan and supporting documents, the State concurs with, opposes, or has no comment on the preferred alternative.

#### Community Acceptance

The analysis performed to date has not accounted for community acceptance, which is the function of the public participation process. Community acceptance will be evaluated after receipt of public comments. EPA, IDHW, and DOE will review and consider public comments on this proposed plan and will incorporate comments in the decision process. The Responsiveness Summary portion of the Record of Decision for the interim action will provide responses to public comments. Written comments and verbal comments received at public meetings will receive equal consideration.

#### **Evaluation of Alternatives**

The options described under the Action Alternative are technically feasible. Discussions

concerning implementability and cost are relative. The risks posed to workers and the general public during implementation of any of the alternatives would be very small. Reference to increased risks during implementation is a relative risk level, the actual risks remain very low.

The alternative will be evaluated against the parameters of long-term effectiveness; reduction of toxicity, mobility, or volume; short-term effectiveness; implementability; cost; and compliance with ARARs.

# Overall Protection of Human Health and Environment

Alternative I leaves the site in its current state and does nothing to restrict contaminant transport or prevent further degradation of the environment. Alternative I is not protective of human health or the environment and will no longer be considered in this evaluation.

#### Compliance with Federal and State Environmental Standards

The two options presented under Alternative 2 are in compliance with Federal and State environmental standards.

# Balancing Criteria

As shown in Table 1, the alternative has been evaluated against the remaining balancing criteria. Discussion of how the alternative meets these criteria is discussed below.

Interim Action Alternatives Evaluation Criteria	Alternative #1 No Action	Alternative #2 Hot Spot Removal
Long-term effectiveness and permanence		
Reduction of toxicity, mobility, or volume		
Short-term effectiveness	Ø	
Implementability		

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		Evaporation Pond		
Alternative 1: N	o Action	Alternative 2: Hot Spot Removal		
			Option A	Option B
No interim	\$ 0	Removal	\$ 213,000	\$ 213,000
action necessary		Treatment and disposal at the TRA Warm Waste Pond	190,000	
		Treatment and disposal at the RWMC		113,000
Total	\$ 0	Total	\$ 403,000	\$ 326,000

### Long-Term Effectiveness

Alternative 2 reduces the potential of further environmental exposure by removing the areas of contaminated materials that pose health and environmental risks. The materials removed from the evaporation pond will be used as fill for partially filled storage containers located at the RWMC. Another option is to treat and dispose of the material at the planned treatment plant at the TRA Warm Waste Pond. Both options are permanent solutions and will reduce the risk for environmental and human exposure to the contaminants currently present in the pond.

#### Reduction of Toxicity, Mobility, or Volume

Alternative 2 reduces contaminant mobility and reduces the toxicity by removing the contaminated material and sending it to either the RWMC or TRA for treatment and disposal.

#### Short-Term Effectiveness

Alternative 2 meets the criteria for short-term effectiveness. Implementation of the alternative has the potential for exposing workers and the public to contamination. The risk of exposure will be minimized through the use of appropriate health and safety measures and radiological controls.

## *Implementability*

The options presented under Alternative 2 can be readily implemented and are commonly used technologies.

#### Cost

Estimated costs are shown on Table 2.

### State Acceptance

IDHW has been involved in the preparation of this proposed plan and comments received have been incorporated.

#### Community Acceptance

Community acceptance of the preferred alternative, treatment, and disposal options are solicited and will be evaluated after receipt of the comments on the proposed plan. EPA, IDHW, and DOE will review and consider public comments in the process that will lead to the Record of Decision. Responses to public comments will be provided in the Responsiveness Summary.

### Compliance with ARARs

The ARAR that may be applied to the remedial activities is:

 "National Emission Standards for Radionuclide Emissions from DOE Facilities" (40 CFR Part 60 Subpart H)

### Applicable DOE Orders:

- Safety, and Health Programs for DOE Operations"
- DOE Order 5480.4, "Environmental, Safety, and Health Protection Standards"
- DOE Order 5820.2A, "Radioactive Waste Management"

These standards along with data gained from the qualitative risk assessment will be used to establish cleanup criteria for the Evaporation Pond. The alternative that is selected will comply with the standards listed above.

## **Summary of Preferred Alternative**

## **Evaporation Pond**

Alternative 2 is the preferred alternative. Removing the hot spots will produce a small volume of contaminated material (approximately 100 yds³). These contaminated materials may be sent to the RWMC, mixed with a cement slurry (grout), and used to fill voids in storage containers. The solidified grout would prevent crushing of the containers, subsidence of the cover materials, and decrease the mobility of the contaminants by fixing them within the solidified mass. Low-level radioactive waste generated at the INEL is routinely disposed of at the RWMC according to applicable regulations.

Another treatment/disposal option that may be used incorporates the proposed soil washing system under development for the TRA Warm Waste Pond sediments. The wastes found at TRA are similar to those at the Evaporation Pond. The contaminated soil from the "hot spots" at the Evaporation Pond could be treated at TRA, with the treated soil co-disposed with the treated TRA sediments. Treatment and disposal at the TRA would consolidate the contaminated soil in one manageable unit, it would remove the inhalation pathway for chromium, and treatment would potentially reduce the volume and toxicity of the contaminants.

After removal of the sediment, the soil beneath the liner will be sampled to determine if leakage and subsequent subsoil contamination has occurred. If contamination is present at levels that pose an unacceptable risk to human health or the environment, the contaminated subsoils would also be removed and sent to the RWMC or TRA.

If the pond is going to be reused, a new liner would be installed. If the pond is not going to be reused, the pond would be backfilled, the surrounding area leveled, and the pond site and surrounding area would be revegetated.

## **Public Involvement Opportunities**

Public input is critical to the CERCLA process.

The following public involvement activities or opportunities are available.

**Public Meetings** - During the 30-day comment period, two public meetings are scheduled as listed below. Verbal comments will be accepted at the meetings on the proposed plan.

# **Public Meetings**

Idaho Falls

April 8, 1992

Westbank Inn, 475 River Parkway

Burley

April 9, 1992

Burley Inn, 800 N. Overland

Both meetings begin at 6:30 p.m.

EPA, IDHW, and DOE need your comments on this proposed plan and the preferred alternative presented. All comments, verbal or written, will be addressed in the Responsiveness Summary portion of the Record of Decision scheduled for August 1992.

**Questions** - If you have questions concerning the proposed plan or other environmental restoration issues, please call or write:

INEL Community Relations Coordinator 785 DOE Place, MS 3902 Idaho Falls, ID 83401-1562 (208) 526-6864 **Information Repositories -** Additional information is contained in the Administrative Record for the interim action. Those documents can be reviewed at any of the information repositories listed below.

INEL Technical Library 1776 Science Center Drive Idaho Falls Idaho Falls Public Library 467 Broadway Idaho Falls

Pocatello Public Library 812 E. Clark Pocatello Moscow-Latah Co. Library 110 S. Jefferson Moscow

Twin Falls Public Library 434 2nd Street East Twin Falls Boise Public Library 715 South Capitol Blvd. Boise

#### Addresses

#### **Written Comments**

Written comments are encouraged and should be addressed to:

Jerry Lyle, Deputy Assistant Manager Environmental Restoration and Waste Management DOE Idaho Field Office 785 DOE Place, MS 3902 Idaho Falls, ID 83401-1562

The agencies involved in the development of this interim action are:

Department of Energy Idaho Field Office Environmental Restoration Division 785 DOE Place Idaho Falls, ID 83401-1562

Environmental Protection Agency Region 10 1200 Sixth Avenue



# Glossary and Acronyms

Administrative Record - Documents including correspondence, public comments, Record of Decision, technical reports, and other upon which the government bases its remedial action selection.

CERCLA - (Comprehensive Environmental Response, Compensation, and Liability Act, commonly called Superfund, 42 U.S.C.A. §§ 9601 to 9675) - Establishes a program to identify sites where hazardous substances have been, or might be, released into the environment and to ensure that they are cleaned up.

Action Plan - Document that defines the schedule and procedures for implementing the Federal Facility Agreement and Consent Order (FFA/CO), the agreement between DOE, EPA, and the State of Idaho implementing CERCLA at the INEL.

Interim Action - Actions to remediate sites in phases using operable units as early actions to climinate, reduce, or control the hazards posed by a site or to expedite the completion of total site cleanup.

*NCP* - (National Contingency Plan) - The basic policy directive for federal response actions under CERLA, including the procedures and standards for responses to releases of hazardous substances.

NPL - (National Priorities List) - A list of sites designated as needing long-term remedial cleanup, whose purpose is to inform the public of the most serious hazardous waste sites in the nation.

*Proposed Plan* - Document requesting public input on a proposed remedial alternative.

RCRA - (Resource Conservation and Recovery Act) - Act that defines hazardous waste and the requirements for dealing with hazardous waste.

Responsiveness Summary - The part of the ROD (see below) which summarizes significant comments received from the public and provides the agencies an opportunity to comment "on the record".

RI/FS - (Remedial Investigation/ Feasibility Study) - Document that describes the characterization of the nature and extent of contamination and the evaluation of potential remedial options.

ROD - (Record of Decision) - Document describing the selection of the remedial action under CERCLA by technically describing the remedy and providing a consolidated source of information about the site and selected remedy. Contains the Responsiveness Summary (see above).



INEL Environmental Restoration Program 785 DOE Place, MS 3902 Idaho Falls, ID 83401-1562

Address Correction Requested